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EXAMINER	
FORD, VANESSA L	

ART UNIT	PAPER NUMBER
1645	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/677,752	JACKSON, W. JAMES	
	Examiner	Art Unit	
	Vanessa L. Ford	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 April 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-112,115,116,118-124,126,127 and 130* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *94,95,99-103,105 and 106* is/are allowed.

6)☒ Claim(s) *107,108,111,112,115,116,118-124,126,127 and 130* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/17/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

FINAL ACTION

1. Applicant's election of species of SEQ ID NO:5 with traverse filed on July 10, 2006 is acknowledged. All other species set forth in the species election are withdrawn.

The traversal is on the grounds that the examination of the entire application does not constitute a serious burden. Applicant also argues that they are entitled to up to ten sequences search in each application. These arguments have been fully considered but are not found to be persuasive for the reasons below:

MPEP 803 states that restriction is proper between patentably distinct inventions where the inventions are (1) independent or distinct as claimed and (2) a serious search and examination burden is placed on the examiner if restriction is not required.

To address Applicant's comment's regarding search up to ten sequences per Applicant, it should be noted that section 803.04 requires that *up to ten* sequences can be search per application. There is not requirement that *ten* sequences per application is permitted.

For these reasons the restriction requirement is deemed to be proper and is therefore made FINAL.

Objection/Rejection Withdrawn

2. In view of Applicant's amendment and response the following objection/rejection set forth in the Non-Final Office action mailed 8/30/05 are withdrawn:

a) objection to the specification, page 2, paragraph 2.

b) objection to claim 125, page 2, paragraph 3.

c) rejection of claims 104 and 125 under 35 U.S.C. 112 first paragraph, pages 8-11, paragraph 5.

Rejection Maintained

3. The rejection of claims 107-108, 111-112, 115-116, 118-124, 126-127 and 130 under 35 U.S.C. 112 first paragraph is maintained for the reasons set forth on pages 3-8, paragraph 4 of the Non-Final Office Action.

The rejection is reiterated below:

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

It should be noted that the Examiner is interpreting the phrase "an amino acid sequence of SEQ ID NO:2" to mean something that is less than the full-length of SEQ ID No:2 or a fragment of SEQ ID No:2.

Claims 107-108, 111-112, 115-116, 118-124, 126-127 and 130 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for SEQ ID NO:2, does not reasonably provide enablement for fragments or variants of SEQ ID NO:2. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The specification is enabling only for the polynucleotide of SEQ ID NO: 2 and not fragments or variants of SEQ ID NO:2. The specification discloses SEQ ID NO: 2 which correspond to the amino acid sequence that encodes a PMPE polypeptide. The claims are directed to sequences that are substantially homologous to SEQ ID NO: 2 which encompassed corresponding sequences from other species, mutated sequences, allelic variants, splice variants, sequences that have a variant degree of identity (similarity, homology), and so forth. There is no guidance provided as to which amino acids can be added, deleted or substituted and still have the polypeptide retain its biological function. Thus, the resulting polypeptide could result in a polypeptide not taught nor enabled by the specification.

Thomas E. Creighton, in his book, "*Proteins: Structures and Molecular Properties, 1984",* (pages 314-315) teaches that variation of the primary structure of a protein can result in an instable molecule. He teaches that a single amino acid change can cause a mutant hemoglobin to have lower stabilities due to any of several causes: 1) alteration of close-packing of the interior; loss of one group that normally participates in a hydrogen bond or salt bridge; 2) the introduction of a charged or polar group into the interior or the insertion into a helical region of a Praline residue, which must distort the alpha-helix; 3) while sometimes radical changes of surface groups, even introduction of a non-polar side chain- have no great effect on stability.

Thomas E. Creighton, in his book "*Protein Structure: A Practical Approach, 1989; pages 184-186"* teaches that present day site directed mutagenesis of a gene allows any amino acids in a protein sequence to be changed to any other, as well as introducing deletions and insertions". The reference goes on to teach that it is difficult to know which amino acid to change and which is the best residue to substitute for the desired functional and structural effect.

Nosoh, Y. et al in "*Protein Stability and Stabilization through Protein Engineering, 1991" (chapter 7, page 197, second paragraph)* adds support to Thomas E. Creighton, by teaching that results so far accumulated on the stability and stabilization of proteins appear to indicate that the strategy for stabilizing proteins differ from protein to protein and that any generalized mechanisms for protein stability have not yet been presented.

The scope of the claims is not commensurate with the enablement provided by the disclosure with regard to the extremely large number of polypeptides broadly encompassed by the claims and the claims broadly encompass a significant number of inoperative species. Since the amino acid sequence of the polypeptide determines its structural and functional properties, predictability of which changes can be tolerated in an amino acid's sequence and still retain similar activity requires a knowledge with regard to which amino acids in the polypeptide's sequence, if any, are tolerant of modification and which are conserved (i.e. expected intolerant to modification) and detailed knowledge of the ways in which the polypeptide's structure relates to function. However, the problem of the prediction of polypeptide's structure from mere sequence data of a single polypeptide and in turn utilizing predicted structural determinations to ascertain functional aspects of the polynucleotide and finally what changes can be tolerated with respect thereto is extremely complex and outside of the realm of routine experimentation.

While recombinant and mutagenesis techniques are known, it is not routine in the art to screen multiple substitutions or multiple modifications of other types and the positions within the polypeptide's sequence where amino acid modifications can be made with a reasonable expectation of success in obtaining similar activity are limited in any polynucleotide and the result of such modifications is unpredictable based on the instant disclosure. One skilled in the art would expect any tolerance to modifications, e.g., multiple substitutions. The sequence of some polynucleotide is highly conserved and one skilled in the art would not expect tolerance to any amino acid modification in such polypeptides.

The claims of the instant application are not only drawn to a purified nucleic acid molecule but are also drawn to fragments of the polypeptide, which comprises at least 8 amino acids. There is no guidance provided in the specification as how one would begin to choose "at least 8 amino acids". The specification does not support the broad scope of the claims, which encompass all modifications and fragments because the specification does not disclose the following:

- the general tolerance to modification and extent of such tolerance;
- specific positions and regions of sequence(s) which can be predictably modified and which regions are critical;
- what fragments, if any, can be made which the retain the biological activity if the intact polypeptide; and
- the specification provides essentially no guidance as to which of the essentially infinite possible choice is likely to be successful.

Factors to be considered in determining whether undue experimentation is required, are set forth in In re Wands 8 USPQ2d 1400. They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art and (8) the breadth of the claims.

Applying the above test to the facts of record, it is determined that 1) no declaration under 37 C.F.R. 1.132 or other relevant evidence has been made of record establishing the amount of experimentation necessary, 2) insufficient direction or guidance is presented in the specification with respect to selecting other polypeptides having claimed functional features, 3) the relative skill of those in the art is commonly recognized as quite high (post-doctoral level). One of skill in the art would require guidance, in order to make or use polypeptide that are variants or fragments of SEQ ID NO: 2 in a manner reasonable in correlation with the scope of the claims. Without proper guidance, the experimentation to is undue.

The Applicant has not provided sufficient guidance to enable one of skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope of the claims broadly including any number of deletions or substitutions and fragments of any size. The scope of the claims must bear a reasonable correlation with the scope of enablement (In re Fisher, 166 USPQ 19 24 (CCPA 1970). Without such guidance, the changes which can be made in the polypeptide's structure and still maintain activity is unpredictable and the experimentation left those skilled in the art is

unnecessarily and improperly, extensive and undue. See Amgen Inc v Chugai Pharmaceutical Co Ltd. 927 F 2d 1200, 18 USPQ2d 1016 (Fed. Cir. 1991) at 18 USPQ2d 1026-1027 and Exparte Forman, 230 U.S. P.Q. 546(Bd. Pat=. App & int. 1986).

In view of all of the above, in view of the lack of predictability in the art, it is determined that it would require undue experimentation to make and use the claimed invention commensurate in scope with the claims.

Applicant's Arguments

Applicant urges that claim 107 is solely drawn to a vaccine comprising a PMPE polypeptide of *Chlamydia* spp comprising an amino acid sequence of SEQ ID No:2 and this claims does not recite 90% identity to SEQ ID NO:2. Applicant urges that claim 116 is limited to one specific allelic variant of SEQ ID NO"2 which differs by nine amino acids. Applicant urges that there is not basis for the rejection under 112 first paragraph.

Examiner's Response to Applicant's Arguments

It is the position of the Office that claim 107 is directed to fragments or variants of SEQ ID NO:2 because the claim recites "an amino acid sequence of SEQ ID NO:2". This phrase is interpreted as less than the full-length sequence as set forth in SEQ ID NO:2.

To address Applicant comments regarding claim 116, Claim 116 is directed to a PMPE polypeptide of *Chlamydia* spp produced by a certain method. This claim does not recite any structural attributes on the a PMPE polypeptide of *Chlamydia* spp encompassed by the claims. Therefore, this claimed does not provide a structure for

the recite Chlamydia polypeptide and does not meet the requirements as set forth under 112 first paragraph.

In view of all of the above this rejection is maintained.

4. The rejection of claims 107, 111-112, 115-116, 118-124 and 130 under 35 U.S.C. 102(b) is maintained for the reasons set forth on pages 12-13, paragraph 6 of the Non-Final Office Action.

The rejection is reiterated below:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The rejection was on the grounds that Griffais et al teach polypeptides from *Chlamydia trachomatis* that can be used in vaccines for the prevention and or treatment of *Chlamydia trachomatis* infections (see the Abstract). Griffais et al teach that vaccines of the invention contain a pharmaceutically acceptable vehicle and may contain adjuvants (page 76). Griffais et al teach a polypeptide (SEQ ID NO: 31) that is 99.2% identical to the claimed polypeptide disclosed in SEQ ID NO:2. Therefore the polypeptide of the prior art, can specifically bind to an antibody that specifically binds to a protein comprising the amino acid of SEQ ID NO:2. Griffais et al teach that proteins and nucleic acid sequences were evaluated using BLAST (pages 9-10). See enclosed sequence alignment.

Although the reference appears to disclose vaccines comprising the same purified polypeptides claimed by the applicant's, the reference does not disclose that the

purified polypeptides produced by the same claimed process. However, the purification or production of protein by a particular process does not impart novelty or unobviousness to a protein when the same protein is taught by the prior art. This is particularly true when the properties of the protein are not changed by the process in an unexpected manner. See In re Thorpe, 227 USPQ 964 (CAFC 1985); In re Marsosi, 218 USPQ 289, 292-293 (CAFC 1983); In re Brown, 173 USPQ 685 (CCPA 1972).

Since the Office does not have the facilities for examining and comparing applicant's vaccine and peptide fragment with the vaccine and peptide fragment of the prior art, the burden is on the applicant to show a novel or unobvious difference between the claimed product and the product of the prior art (i.e., that the vaccine and peptide fragment of the prior art does not possess the same material structural and functional characteristics of the claimed vaccine and peptide fragment). See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

Applicant's Arguments

Applicant urges that the rejection is moot. Applicant urges that the claims have been amended to a limited number of biosequences.

Applicant urges that the deposit mutant M15 pREP (ATCC NO.PTA-2462) contains a MRGS-His_6 domain not taught in the prior art cited.

Applicant points that the difference in the sequences of the invention and the prior art cited (Graffais et al).

Examiner's Response to Applicant's Arguments

It should be noted that claims 107-108 and (118-124, 126-127 and 130) recite "an amino acid sequence of SEQ ID NO:2" and are directed to *fragments* of SEQ ID NO:2. It should be noted that claims 111-112, 115-116 and dependent claims (118-14, 126-127 and 130) are product-by-process claims which have *no structural attributes*.

Graffais et al teach (SEQ ID NO: 31) that is 99.2% identical to the claimed polypeptide disclosed in SEQ ID NO:2 and further teach that the sequence of the

invention are used in vaccine compositions. Thus, Graffais et al anticipates the claimed invention.

To address Applicant's comment regarding deposit mutant M15 pREP (ATCC NO.PTA-2462) which is recited in claim 116, claim 116 is a product-by-process claim. Applicant is reminded that the purification or production of protein by a particular process does not impart novelty or unobviousness to a protein when the same protein is taught by the prior art. This is particularly true when the properties of the protein are not changed by the process in an unexpected manner. See In re Thorpe, 227 USPQ 964 (CAFC 1985); In re Marsosi, 218 USPQ 289, 292-293 (CAFC 1983); In re Brown, 173 USPQ 685 (CCPA 1972).

In view of all of the above, this rejection is maintained.

5. The rejection of claims 107-108, 111-112, 115-116, 118-124 and 130 under 35 U.S.C. 102(a) is maintained for the reasons set forth on pages 14-15, paragraph 7 of the Non-Final Office Action.

The rejection is reiterated below:

The rejection was on the grounds that Probst et al teach pharmaceutical compositions and vaccines comprising Chlamydial polypeptides (see the Abstract). Probst et al teach vaccines comprising antibodies (page 58 and page102, claim 22). Probst et al teach that the vaccines of the invention may comprise one or more polypeptide and an immunostimulant (pages 45-46). Probst et al teach that any variety of immunostimulants may be employed in the vaccine compositions of the invention and an adjuvant may be included (page 47). Probst et al teach that the vaccine may include a combination of adjuvants such as monophosphoryl lipid A (MPL) and saponin (QS21) (pages 48-49). Probst et al teach that any vaccine provided in the invention may include a combination of antigen, immune response enhancer and a suitable carrier or excipient (page 49). Probst et al teach SEQ ID NO:177 which is the predicted full-length amino acid sequence for *C. trachomatis* (page 17). Probst et al teach a

polypeptide (SEQ ID NO: 177) that is 98% identical to SEQ ID NO:2 and comprises the claimed peptide fragment of SEQ ID NO: 5. See enclosed sequence alignment.

Although the reference appears to disclose vaccines comprising the same purified polypeptides claimed by the applicant's, the reference does not disclose that the purified polypeptides produced by the same claimed process. However, the purification or production of protein by a particular process does not impart novelty or unobviousness to a protein when the same protein is taught by the prior art. This is particularly true when the properties of the protein are not changed by the process in an unexpected manner. See In re Thorpe, 227 USPQ 964 (CAFC 1985); In re Marsosi, 218 USPQ 289, 292-293 (CAFC 1983); In re Brown, 173 USPQ 685 (CCPA 1972).

Since the Office does not have the facilities for examining and comparing applicant's vaccine with the vaccine of the prior art, the burden is on the applicant to show a novel or unobvious difference between the claimed product and the product of the prior art (i.e., that the vaccine of the prior art does not possess the same material structural and functional characteristics of the claimed vaccine). See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

Applicant's Arguments

Applicant urges that the rejection is moot. Applicant urges that the claims have been amended to a limited number of biosequences.

Applicant urges that the deposit mutant M15 pREP (ATCC NO.PTA-2462) contains a MRGS-His_6 domain not taught in the prior art cited.

Applicant points that the difference in the sequences of the invention and the prior art cited (Probst et al).

Examiner's Response to Applicant's Arguments

It should be noted that claims 107-108 and (118-14, 126-127 and 130) recite "an amino acid sequence of SEQ ID NO:2" and are directed to *fragments* of SEQ ID NO:2. It should be noted that claims 111-112, 115-116 and dependent claims (118-124, 126-127 and 130) are product-by-process claims which have *no structural attributes*.

Probst et al teach a polypeptide (SEQ ID NO: 177) that is 98% identical to SEQ ID NO:2 and comprises the claimed peptide fragment of SEQ ID NO: 5 and further teach that the sequence of the invention are used in vaccine compositions. Thus, Probst et al anticipates the claimed invention.

To address Applicant's comment regarding deposit mutant M15 pREP (ATCC NO.PTA-2462) which is recited in claim 116, claim 116 is a product-by-process claim. Applicant is reminded that the purification or production of protein by a particular process does not impart novelty or unobviousness to a protein when the same protein is taught by the prior art. This is particularly true when the properties of the protein are not changed by the process in an unexpected manner. See In re Thorpe, 227 USPQ 964 (CAFC 1985); In re Marsosi, 218 USPQ 289, 292-293 (CAFC 1983); In re Brown, 173 USPQ 685 (CCPA 1972).

In view of all of the above, this rejection is maintained.

6. The rejection of claims 107-108, 111-112, 115-116, 118-124 and 130 under 35 U.S.C. 102(a) is maintained for the reasons set forth on pages 15-17, paragraph 8 of the Non-Final Office Action.

The rejection is reiterated below:

The rejection was on the grounds that Probst et al teach pharmaceutical compositions and vaccines comprising Chlamydial polypeptides (see the Abstract). Probst et al teach that the vaccines of the invention may comprise one or more polypeptide and an immunostimulant (column 27). Probst et al teach that any variety of immunostimulants may be employed in the vaccine compositions of the invention and an adjuvant may be included (column 27). Probst et al teach that the vaccine may include on or more immunostimulants (column 30). Probst et al teach that any vaccine provided in the invention may include a combination of antigen, immune response

enhancer and a suitable carrier or excipient (column 27). Probst et al teach that vaccines of the invention may also contain other *Chlamydia* antigens either incorporated into a combination polypeptide or present within a separate polypeptide (column 27). Probst et al teach SEQ ID NO:177 which is the predicted full-length amino acid sequence for *C. trachomatis* (column 10). Probst et al teach a polypeptide (SEQ ID NO: 177) that is 98% identical to SEQ ID NO:2 and comprises the claimed peptide fragment of SEQ ID NO: 5. See enclosed sequence alignment.

Although the reference appears to disclose vaccines comprising the same purified polypeptides claimed by the applicant's, the reference does not disclose that the purified polypeptides produced by the same claimed process. However, the purification or production of protein by a particular process does not impart novelty or unobviousness to a protein when the same protein is taught by the prior art. This is particularly true when the properties of the protein are not changed by the process in an unexpected manner. See In re Thorpe, 227 USPQ 964 (CAFC 1985); In re Marsosi, 218 USPQ 289, 292-293 (CAFC 1983); In re Brown, 173 USPQ 685 (CCPA 1972).

Since the Office does not have the facilities for examining and comparing applicant's vaccine with the vaccine of the prior art, the burden is on the applicant to show a novel or unobvious difference between the claimed product and the product of the prior art (i.e., that the vaccine of the prior art does not possess the same material structural and functional characteristics of the claimed vaccine). See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

Applicant's Arguments

Applicant urges that the rejection is moot. Applicant urges that the claims have been amended to a limited number of biosequences.

Applicant urges that the deposit mutant M15 pREP (ATCC NO.PTA-2462) contains a MRGS-His_6 domain not taught in the prior art cited.

Applicant points that the difference in the sequences of the invention and the prior art cited (Probst et al).

Examiner's Response to Applicant's Arguments

It should be noted that claims 107-108 and (118-124, 126-127 and 130) recite "an amino acid sequence of SEQ ID NO:2" and are directed to *fragments* of SEQ ID

NO:2. It should be noted that claims 111-112, 115-116 and dependent claims (118-124, 126-127 and 130) are product-by-process claims which have *no structural attributes.*

Probst et al teach a polypeptide (SEQ ID NO: 177) that is 98% identical to SEQ ID NO:2 and comprises the claimed peptide fragment of SEQ ID NO: 5 and further teach that the sequence of the invention are used in vaccine compositions. Thus, Probst et al anticipates the claimed invention.

To address Applicant's comment regarding deposit mutant M15 pREP (ATCC NO.PTA-2462) which is recited in claim 116, claim 116 is a product-by-process claim. Applicant is reminded that the purification or production of protein by a particular process does not impart novelty or unobviousness to a protein when the same protein is taught by the prior art. This is particularly true when the properties of the protein are not changed by the process in an unexpected manner. See In re Thorpe, 227 USPQ 964 (CAFC 1985); In re Marsosi, 218 USPQ 289, 292-293 (CAFC 1983); In re Brown, 173 USPQ 685 (CCPA 1972).

In view of all of the above, this rejection is maintained.

7. The rejection of claims 107-108, 111-112, 115-116, 118-124, 126-127 and 130 under 35 U.S.C. 103(a) is maintained for the reasons set forth on pages 14-15, paragraph 7 of the Non-Final Office Action.

The rejection is reiterated below:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The rejection was on the grounds that Probst et al teach pharmaceutical compositions and vaccines comprising Chlamydial polypeptides (see the Abstract). Probst et al teach that the vaccines of the invention may comprise one or more polypeptide and an immunostimulant (column 27). Probst et al teach that any variety of immunostimulants may be employed in the vaccine compositions of the invention and an adjuvant may be included (column 27). Probst et al teach that the vaccine may include on or more immunostimulants (column 30). Probst et al teach that any vaccine provided in the invention may include a combination of antigen, immune response enhancer and a suitable carrier or excipient (column 27). Probst et al teach that vaccines of the invention may also contain other *Chlamydia* antigens either incorporated into a combination polypeptide or present within a separate polypeptide (column 27). Probst et al teach SEQ ID NO :177 which is the predicted full-length amino acid sequence for *C. trachomatis* (column 10). Probst et al teach a polypeptide (SEQ ID NO: 177) that is 98% identical to SEQ ID NO:2 and comprises the claimed peptide fragment of SEQ ID NO: 5. See enclosed sequence alignment.

Probst et al do not specifically teach the use of high molecular weight proteins *Chlamydia trachomatis*.

Murdin et al teach an attenuated poliovirus hybrid expressing a neutralization epitope from the major outer membrane protein of *Chlamydia trachomatis* as well as a 40kDa (high molecular weight) outer membrane protein of *Chlamydia trachomatis* (page 4406, column 2, paragraph 2), in an analogous art for the purpose of inducing a strong mucosal immune response in primates and humans (see the Abstract).

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to add the poliovirus-chlamydia hybrid as taught by Murdin et al to the vaccine composition of Probst et al because Probst et al teach that

vaccines of the invention may also contain other *Chlamydia* antigens either incorporated into a combination polypeptide or present within a separate polypeptide (column 27). Therefore, it would have been expected barring evidence to the contrary, that the addition of poliovirus-chlamydia hybrids to the vaccine composition of Probst et al would allow for a powerful subunit vaccine because Murdin et al teach that poliovirus infection induces a strong mucosal immune response in primates and humans which indicate that poliovirus-chlamydia hybrids could become a powerful tool for the development of chlamydial vaccines (see the Abstract).

Applicant' Arguments

Applicant urges that Probst et al do not teach the same sequence as set forth in SEQ NO:2 as recited in the claims. Applicant points out difference in the sequence as set forth in SEQ ID NO: 2 and the cited prior art (Probst et al).

Examiner's Response to Applicant's Arguments

To address Applicant's comments regarding the difference between the sequences of the art and the sequence as set forth in SEQ ID NO:2 as recited in the claims, it should be noted that claims 107-108 and (118-124, 126-127 and 130) recite "an amino acid sequence of SEQ ID NO:2" and are directed to *fragments* of SEQ ID NO:2. It should be noted that claims 111-112, 115-116 and dependent claims (118-124, 126-127 and 130) are product-by-process claims which have *no structural attributes.* Thus, the current claims are *not directed to the amino acid as set forth in SEQ ID NO:2.*

Probst et al teach a polypeptide (SEQ ID NO: 177) that is 98% identical to SEQ ID NO:2 and comprises the claimed peptide fragment of SEQ ID NO: 5 and further teach that the sequence of the invention are used in vaccine compositions.

Probst et al do not teach *Chlamydia trachomatis.* However, Murdin et al teach an attenuated poliovirus hybrid expressing a neutralization epitope from the major outer

membrane protein of *Chlamydia trachomatis* as well as a 40kDa (high molecular weight) outer membrane protein of *Chlamydia trachomatis* (page 4406, column 2, paragraph 2), in an analogous art for the purpose of inducing a strong mucosal immune response in primates and humans (see the Abstract). One of ordinary skill in the art would have been motivated to add the poliovirus-chlamydia hybrid as taught by Murdin et al to the vaccine composition of Probst et al because Probst et al teach that vaccines of the invention may also contain other *Chlamydia* antigens either incorporated into a combination polypeptide or present within a separate polypeptide. Additionally, Murdin et al teach that poliovirus infection induces a strong mucosal immune response in primates and humans which indicate that poliovirus-chlamydia hybrids could become a powerful tool for the development of chlamydial vaccines (see the Abstract).

To address Applicant's comment regarding deposit mutant M15 pREP (ATCC NO.PTA-2462) which is recited in claim 116, claim 116 is a product-by-process claim. Applicant is reminded that the purification or production of protein by a particular process does not impart novelty or unobviousness to a protein when the same protein is taught by the prior art. This is particularly true when the properties of the protein are not changed by the process in an unexpected manner. See In re Thorpe, 227 USPQ 964 (CAFC 1985); In re Marsosi, 218 USPQ 289, 292-293 (CAFC 1983); In re Brown, 173 USPQ 685 (CCPA 1972).

New Objection Necessitated by Applicant's Amendment

8. Claim 120 is objected to for the following informality: "7107" should be changed to "107". Correction is required.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Status of Claims

10. Claims 94-95, 99-103 and 105-106 are allowed. The prior art does not teach or suggest a vaccine comprising an isolated recombinant PMPE polypeptide comprising a polypeptide encoded by a nucleic acid molecule comprising the nucleotide sequence of SEQ ID NO:1 fused to a nucleic acid molecule encoding a histidine affinity domains nor does the prior art teach a vaccine comprising an isolated recombinant PMPE polypeptide comprising the amino acid sequence of SEQ ID NO:2 fused to an amino acid sequence comprising a histidine affinity domain. The closet prior art is Griffais et al (WO 9928475) which teach a polypeptide (SEQ ID NO: 31) that is 99.2% identical to the claimed polypeptide disclosed in SEQ ID NO:2 and Probst et al (WO 000/34483) or (US Patent No.6,432,916) which teach a polypeptide (SEQ ID NO: 177) that is 98% identical to SEQ ID NO:2 and comprises the claimed peptide fragment of SEQ ID NO: 5.

Conclusion

11. Any inquiry of the general nature or relating to the status of this general application should be directed to the Group receptionist whose telephone number is (703) 308–0196.

Papers relating to this application may be submitted to Technology Center 1600, Group 1640 by facsimile transmission. The faxing of such papers must conform with the notice published in the Office Gazette, 1096 OG 30 (November 15, 1989). Should applicant wish to FAX a response, the current FAX number for the Group 1600 is (703) 872-9306.

Any inquiry concerning this communication from the examiner should be directed to Vanessa L. Ford, whose telephone number is (571) 272-0857. The examiner can normally be reached on Monday – Friday from 9:00 AM to 6:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Siew, can be reached at (571) 272-0787.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov./>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vanessa L. Ford
Biotechnology Patent Examiner
July 3, 2006

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